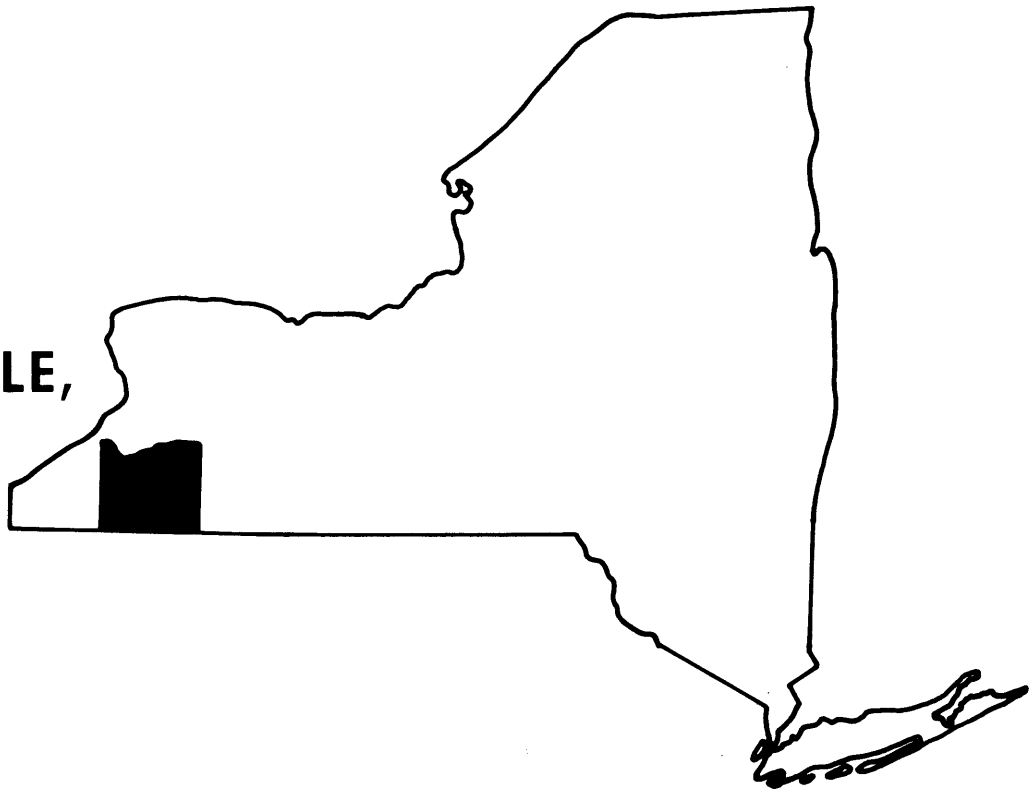
FLOOD INSURANCE STUDY



VILLAGE OF FRANKLINVILLE, NEW YORK
CATTARAUGUS COUNTY

JANUARY 1978

U.S. DEPARTMENT of HOUSING & URBAN DEVELOPMENT
FEDERAL INSURANCE ADMINISTRATION

TABLE OF CONTENTS

TABLE OF CONTENTS - continued

FIGURES

TABLES

EXHIBITS

PUBLISHED SEPARATELY:

FLOOD INSURANCE STUDY
VILLAGE OF FRANKLINVILLE, NEW YORK

1.0 INTRODUCTION

1.1 Purpose of Study

The purpose of this Flood Insurance Study is to investigate the existence and severity of flood hazards in the Village of Franklinville, Cattaraugus County, New York, and to aid in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. Initial use of this information will be to convert the Village of Franklinville to the regular program of flood insurance by the Federal Insurance Administration (FIA). Further use of this information will be made by local and regional planners in their efforts to promote sound land use and flood plain development.

1.2 Coordination

The purpose of the Flood Insurance Study was explained at a meeting held on July 31, 1975, between representatives of the Village of Franklinville, the FIA, the Cattaraugus County Planning Board, the United States Department of Agriculture, Soil Conservation Service (SCS), the United States Army Corps of Engineers (COE), and the New York State Department of Environmental Conservation (the study contractor).

A search for basic data was made at all levels of government. The COE and the SCS provided information as well as copies of previously surveyed cross sections of Ischua and Gates Creeks. The U. S. Geological Survey (USGS) was contacted to obtain contour maps showing drainage boundaries.

On November 17, 1976, a meeting was held with officials of the village to obtain additional local input. The final Consultation and Coordination Officer's meeting was held on February 25, 1977, where the final draft of the Flood Insurance Study was presented for further local comment. The meeting was attended by representatives of FIA, the study contractor, the Village of Franklinville, the Cattaraugus County Planning Board, and interested citizens. There were no comments critical to the report presented at this meeting.

1.3 Authority and Acknowledgements

The source of authority for this Flood Insurance Study is the National Flood Insurance Act of 1968, as amended.

The hydrologic and hydraulic analyses for this study were performed by the New York State Department of Environmental Conservation for the Federal Insurance Administration, under Contract No. H-3856. This work, which was completed in January 1977, covered all significant flooding sources in the Village of Franklinville.

2.0 AREA STUDIED

2.1 Scope of Study

This Flood Insurance Study covers the incorporated areas of the Village of Franklinville, New York. The area of study is shown on the Vicinity Map (Figure 1).

The areas studied by detailed methods include Ischua and Gates Creeks for a combined distance of 1.9 miles through the village. The areas studied by detailed methods were selected with priority given to all known flood hazard areas, areas of projected development and proposed construction for the next five years (through January, 1982). Approximately 2,000 feet of Saunders Creek were studied by approximate methods. Approximate methods of analysis were used to study those areas having low development potential and/or minimal flood hazards as identified at the initiation of the study. The scope and methods of study were proposed to and agreed upon by the FIA.

2.2 Community Description

This Flood Insurance Study covers the area of the Village of Franklinville which is located in the Town of Franklinville, in the eastern part of Cattaraugus County in western New York. The village has an area of approximately one square mile. In 1960 the village population was 2,124, and in 1970, 1,948 (Reference 1). The topography is fairly flat with an average elevation of about 1,600. The southern part is hilly.

Physiographically, the area is composed of maturely dissected plateaus designated as the Northwestern Appalachian Plateau Border and the Allegheny Plateau. The soils range from gravelly loam to clay but in most places are silty loam (Reference 2). Both

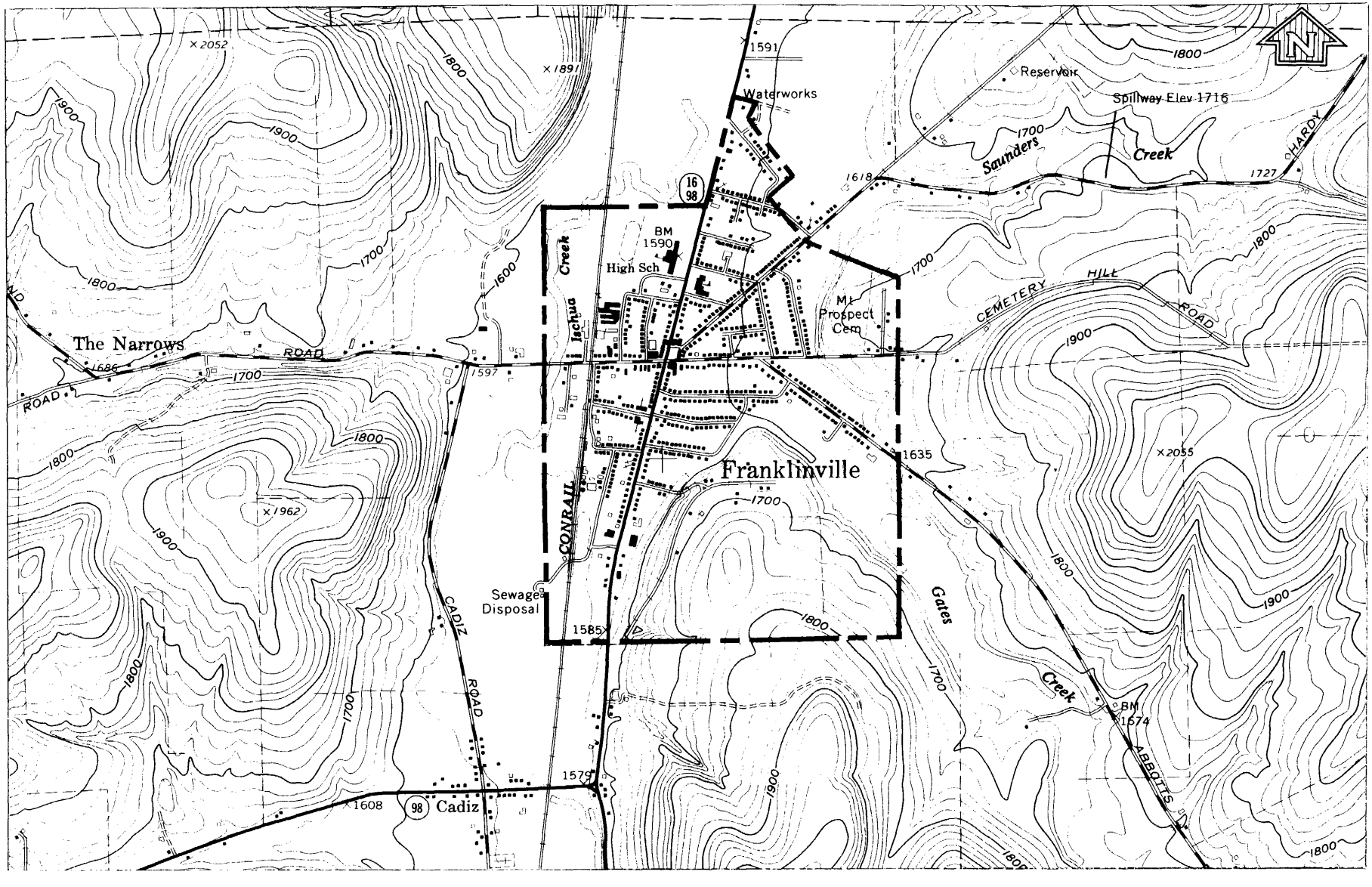


FIGURE 1

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

VILLAGE OF FRANKLINVILLE, NY
(CATTARAUGUS CO.)

APPROXIMATE SCALE
2000 0 2000 4000 6000 FEET

VICINITY MAP

the original and the present second and third growth forests are composed principally of Yellow Birch, Beech, and Hard Maple.

Average annual precipitation is about 38 inches, and the runoff, 20 inches. Average January and July temperatures are 25°F and 68°F, respectively (Reference 3).

Ischua Creek begins in the Town of Machias, Cattaraugus County, and flows into the Village of Franklinville through the northwest corner. It leaves the village after traveling 3,050 feet in a southerly direction. Ischua Creek continues to the south into Olean Creek and joins the Allegheny River at Olean, New York. The Allegheny River joins with the Monongahela River at Pittsburgh to form the Ohio River.

Gates Creek begins in the Town of Lyndon, Cattaraugus County, and flows into the Village of Franklinville through the southeastern corner. It travels through the village for 7,050 feet, first in a northwesterly and then a southwesterly direction. It then leaves the village and passes into the Town of Franklinville. Gates Creek meets Ischua Creek in the town. There is considerable residential development along the flood plain of Gates Creek. Even though the residential development along Ischua Creek is nominal, growth is expected in the near future.

Portions of the flood plains for Gates Creek are shown in Figures 2 and 3.

2.3 Principal Flood Problems

The most frequent floods in the village occur as a result of winter or spring rainfall in addition to runoff from the melting snow. Other floods in the area are the result of intense, local thunderstorm activity during summer months. Occasionally, the paths of hurricanes pass close enough to the village to cause flooding. There are no gaging stations located in the village, however, the maximum recorded flood on Gates Creek occurred on September 28, 1967, with a discharge of approximately 488 cubic feet per second (cfs) for a drainage area of 19.3 square miles (Reference 4).

Both the Elm Street bridge and the Conrail bridge were partially covered by the flood of September 1967. The flood of June 1972 reaches to within one and one half feet of the bottom of both bridges (Reference 5).

Figure 2 - South Main Street bridge (Route 16) over Gates Creek looking upstream.

Figure 3 - Fourth Avenue bridge over Gates Creek looking upstream.

2.4 Flood Protection Measures

The Ischua Creek Watershed project of the SCS has been authorized for development and is almost completed (Reference 6). This project covers 117 square miles around Franklinville. It includes five flood water retarding structures and one multipurpose reservoir, along with one debirs basin, channel improvements, stream protection, and levees. The major purpose of the project is to provide flood protection for agricultural land, and for residential and industrial properties in the Village of Franklinville.

An earthen dam (SCS Water Retarding Structure #4) on Saunders Creek in the northeast corner of the Town of Franklinville has limited flood regulation effect. The spillway of the dam is at elevation 1716 feet.

A portion of the west bank of Gates Creek in the Village of Franklinville is a berm made of spoil dredged from the channel. The berm was apparently built for flood protection without engineering design of specifications. Due to this lack of actual engineering data, it can only be noted that the berm has been built to an elevation that will protect the portion of the village along Gates Creek from a 100-year flood assuming the berm does not fail.

3.0 ENGINEERING METHODS

For the flooding sources studied in detail in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Floods having recurrence intervals of 10, 50, 100, and 500 years have been selected as having special significance for flood plain management, and for flood insurance premium rates. The analyses reported here reflect current conditions in the watersheds of the flooding sources.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency relationships for floods of the selected recurrence intervals for each flooding source studied in detail in the community.

A synthetic rainfall-runoff relationship method, based on a dimensionless unit hydrograph, was used to develop flood flow-frequency relationships. The 24-hour rainfall amounts for frequencies up to 100 years, as obtained from the Rainfall

Frequency Atlas of the United States (Reference 7), were plotted on log-normal paper and the rainfall amount for the 500-year frequency was extrapolated from the resulting graph.

The watershed of each stream was divided into subareas to evaluate the hydrologic effects of as many tributaries as would be significant.

The Computer Program TR-20 (Reference 8), developed by the SCS, was used to compute surface runoff. It takes into account conditions affecting runoff such as land use, type of soil, shape and slope of watershed, antecedent moisture condition, etc. It develops a hydrograph and routes the hydrograph through stream channels and reservoirs. The program is designed to combine the routed hydrograph with those from other tributaries and print out the total composite hydrograph peak discharges, and times of occurrence at each desired point in the watershed for each storm evaluated. From this data, frequency discharge-drainage area curves were plotted for each evaluation point.

The summary of discharges information which was derived from this relationship is shown in Table 1.

TABLE 1 - SUMMARY OF DISCHARGES

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. Miles)	PEAK DISCHARGE (cfs) 10-YEAR	50-YEAR	100-YEAR	500-YEAR
ISCHUA CREEK					
South of Franklinville	54.7	2,400	3,500	4,000	5,000
GATES CREEK					
At Upstream Corporate Limits	18.7	1,100	1,600	1,900	2,500

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of the flooding sources studied in detail in the community were carried out to provide estimates of the elevations of floods of the selected recurrence intervals along each of these flooding sources.

Flood profiles on Ischua and Gates Creeks were calculated using the SCS WSP-2 water-surface profiles computer program (Reference 9).

This program uses the standard step method, with some modifications, to compute profiles between valley sections. All profiles are computed in the upstream direction. Therefore, only subcritical flow, a condition normally characteristic of natural streams, can be analyzed. For any super-critical flows encountered the program will assume critical depth and resume computations. At any one road restriction, WSP-2 can compute head losses through one bridge opening or up to five culvert openings with different configurations.

Cross sections were located at close intervals above and below bridges, at control sections along the stream length, and at significant changes in ground relief, land use, or land cover.

Reach lengths for the channel were measured along the centerline of channel between sections and overbank reach lengths were measured along the approximate centerline of the effective out-of-channel flow area.

Roughness coefficients (Manning's "n") were determined by field inspection and were based on the National Engineering Handbook (Supplement B) (Reference 10). In arriving at a realistic value due weight was given to the natural materials of which the channel was composed, surface irregularity, variations in shape and size of cross sections, characteristics of obstructions such as debris deposits stumps, exposed roots, boulders, fallen and lodged logs, etc., type of vegetation, and degree of meandering. The roughness coefficients for main channel areas varied from 0.055 to 0.065 and for overbank areas from 0.060 to 0.090.

The frequency discharge relationships at each cross section were used to develop the corresponding stage-frequency relationships.

Flood profiles were drawn showing computed water-surface elevations to an accuracy of 0.5 foot for floods of the selected recurrence intervals. Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway is computed (Section 4.2) selected cross section locations are also shown on the Flood Boundary and Floodway Map (Exhibit 2). Starting elevations were determined by the slope-area method. All elevations are referenced to the National Geodetic Vertical Datum of 1929 (NGVD), formerly referred to as Sea Level Datum of 1929; elevation reference marks used in the study are shown on the maps.

For the Saunders Creek area studied by approximate methods, USGS Flood Height-Drainage Area Curves for the 100-year flood (Reference 11) were utilized. Drainage areas were developed at selected locations from USGS 7.5 Minute Series topographic maps (Reference 12). The 100-year flood heights were then extracted from the curves and using USGS 7.5 Minute Series topographic maps for differential elevation reference, approximate 100-year inundation limits were plotted on New York State Department of Transportation 7.5 Minute Series planimetric maps (Reference 13). Estimates of discharges and slopes and a field view of each stream were also employed to verify the delineation.

It should be noted that no flood height-drainage area relationship has been developed by the USGS for the Allegheny River Basin. However, the upper Genesee River Basin, immediately to the east of the Allegheny River Basin has definite hydrologic and hydraulic similarities to the area of study and was, therefore, used in the analysis.

Flood elevations in the village are often raised by ice jams during spring thaws; the hydraulic analyses for this study, however, are based only on the effects of unobstructed flow. The flood elevations as shown on the profiles are thus considered valid only if the hydraulic structures in general remain unobstructed and dams and other flood control structures operate properly and do not fail.

4.0 FLOOD PLAIN MANAGEMENT APPLICATIONS

A prime purpose of the National Flood Insurance Program is to encourage state and local governments to adopt sound flood plain management programs. Each Flood Insurance Study, therefore, includes a flood boundary map designed to assist communities in developing sound flood plain management measures.

4.1 Flood Boundaries

In order to provide a national standard without regional discrimination, the 100-year flood has been adopted by the FIA as the base flood for purposes of flood plain management measures. The 500-year flood is employed to indicate additional areas of flood risk in the community. For each stream studied in detail, the boundaries of the 100- and the 500-year floods have been delineated using the flood elevations determined at each cross section; between cross

sections, the boundaries were interpolated using topographic maps developed for this study from aerial photographs at a scale of 1":400' with a contour interval of 5.0 feet. In cases where the 100- and the 500-year flood boundaries are close together, only the 100-year boundary has been shown.

For the area studied by approximate methods, the flood elevations determined were plotted onto the USGS topographic maps previously referenced.

The boundaries of the 100- and 500-year floods are shown on the Flood Boundary and Floodway Map (Exhibit 2). Small areas within the flood boundaries may lie above the flood elevations and therefore, may not be subject to flooding. Owing to limitations of the map scale or lack of detailed topographic data, such areas are not shown.

4.2 Floodways

Encroachment on flood plains, such as artificial fill, reduces the flood-carrying capacity, increases the flood heights of streams, and increases flood hazards in areas beyond the encroachment itself. One aspect of flood plain management involves balancing the economic gain from flood plain development against the resulting increase in flood hazard. For purposes of the Flood Insurance Program, the concept of a floodway is used as a tool to assist local communities in this aspect of flood plain management. Under this concept, the area of the 100-year flood is divided into a floodway and a floodway fringe. The floodway is the channel of a stream plus any adjacent flood plain areas that must be kept free of encroachment in order that the 100-year flood may be carried without substantial increases in flood heights. Minimum standards of the FIA limit such increases in flood heights to 1.0 foot provided hazardous velocities are not produced. The floodways in this report are presented to local agencies as minimum standards that can be adopted or that can be used as a basis for additional studies.

The floodways presented in this study were computed on the basis of equal conveyance reduction from each side of the flood plain using the "HUD 15" Computer Program (Reference 14). The results of these computations are tabulated at selected cross sections for each stream segment for which a floodway is computed (Table 2).

As shown on the Flood Boundary and Floodway Map (Exhibit 2), the floodway widths were determined at cross sections; between cross sections, boundaries were interpolated. In cases where the boundaries of the floodway and 100-year flood are either close together or collinear, only the floodway boundary has been shown.

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE[1]	WIDTH (FT.)	SECTION AREA (SQ. FT.)	MEAN VELOCITY (F.P.S.)	WITH FLOODWAY (NGVD)	WITHOUT FLOODWAY (NGVD)	DIFFERENCE (FT.)
Ischua Creek							
A	1,050	225[2]	1,096	3.65	1,583.3	1,582.3	1.0
B	2,700	498	2,419	1.41	1,586.0	1,585.0	1.0
Gates Creek							
A	400	80	466	4.08	1,580.2	1,579.2	1.0
B	1,250	60	566	3.35	1,581.6	1,580.6	1.0
C	4,200	90	352	5.40	1,596.8	1,595.8	1.0

[1]FEET FROM CORPORATE LIMITS
[2]THIS WIDTH EXTENDS BEYOND THE CORPORATE LIMITS

TABLE 2

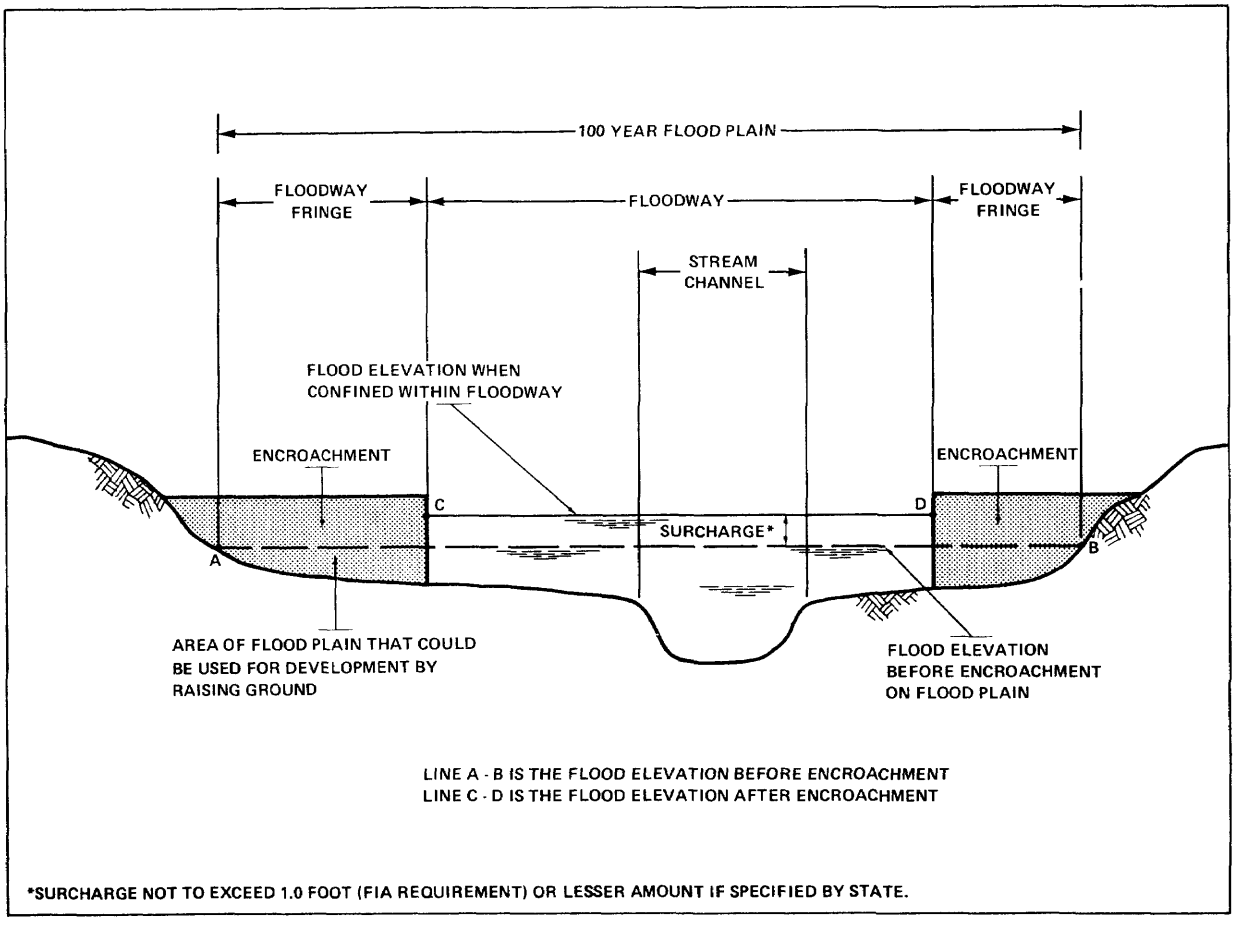
DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

VILLAGE OF FRANKLINVILLE, NY
(CATTARAUGUS CO.)

FLOODWAY DATA

ISCHUA CREEK AND GATES CREEK

The area between the floodway and the boundary of the 100-year flood is termed the floodway fringe. The floodway fringe thus encompasses the portion of the flood plain that could be completely obstructed without increasing the water-surface elevation of the 100-year flood more than 1.0 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to flood plain development are shown in Figure 4.



FLOODWAY SCHEMATIC Figure 4

5.0 INSURANCE APPLICATION

In order to establish actuarial insurance rates, the FIA has developed a process to transform the data from the engineering study into flood insurance criteria. This process includes the determination of reaches, Flood Hazard Factors (FHFs), and flood insurance zone designations for each flooding source affecting the Village of Franklinville.

5.1 Reach Determinations

Reaches are defined as lengths of watercourses having relatively the same flood hazard, based on the average weighted difference in water-surface elevations of the 10- and 100-year floods. This difference does not have a variation greater than that indicated in the following table for more than 20 percent of the reach.

Average Difference Between 10- and 100-Year Floods	Variation
Less than 2 feet	0.5 foot
2 to 7 feet	1.0 foot

Two reaches meeting the above criteria were required for the flooding sources of the Village of Franklinville. These include one each on Ischua and Gates Creeks. The locations of the reaches are shown on the Flood Profiles (Exhibit 1).

5.2 Flood Hazard Factors

The FHF is the FIA device used to correlate flood information with insurance rate tables. Correlations between property damages from floods and their FHFs are used to set actuarial insurance premium rate tables based on FHFs from 005 to 200.

The FHF for a reach is the average weighted difference between the 10- and 100-year flood water-surface elevations expressed to the nearest one-half foot, and shown as a three-digit code. For example, if the difference between water-surface elevations of the 10- and 100-year floods is 0.7 foot, the FHF is 005; if the difference is 1.4 feet, the FHF is 015; if the difference is 5.0 feet, the FHF is 050. When the difference between the 10- and 100-year flood water-surface elevations is greater than 10.0 feet, accuracy for the FHF is to the nearest foot.

5.3 Flood Insurance Zones

After the determination of reaches and their respective FHFs the entire incorporated area of Franklinville was divided into zones, each having a specific flood potential or hazard. Each zone was assigned one of the following flood insurance zone designations:

Zone A: Special Flood Hazard Areas inundated by the 100-year flood, determined by approximate methods, no base flood elevations shown or FHFs determined.

Zone A4: Special Flood Hazard Areas inundated by the 100-year flood, determined by detailed methods; base flood elevations shown, and zones assigned according to FHFs.

Zone B: Areas between the Special Flood Hazard Area and the limits of the 500-year flood, including areas of the 500-year flood plain that are protected from the 100-year flood by dike, levee, or other water control structure; or, areas subject to certain types of 100-year shallow flooding where depths are less than 1.0 foot. Zone B is not subdivided.

Zone C: Areas of minimal flooding.

Table 3, "Flood Insurance Zone Data," summarizes the flood elevation differences, FHFs, flood insurance zones, and base flood elevations for each flooding source studied in detail in the community.

5.4 Flood Insurance Rate Map Description

The Flood Insurance Rate Map for the Village of Franklinville is, for insurance purposes, the principal result of the Flood Insurance Study. This map (published separately) contains the official delineation of flood insurance zones and base flood elevation lines. Base flood elevation lines show the locations of the expected whole-foot water-surface elevations of the base (100-year) flood. This map is developed in accordance with the latest flood insurance map preparation guidelines published by the FIA.

6.0 OTHER STUDIES

No other flood studies exist for the Village of Franklinville. A Flood Insurance Study for the Town of Franklinville has been completed by the same study contractor (Reference 15). All information contained in the two studies is in complete agreement. This study is authoritative for purposes of the Flood Insurance Program and data presented here either supersede or are compatible with previous studies.

FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION[3] (NGVD)
		10% (10-YR.)	2% (50-YR.)	0.2% (500-YR.)			
Ischua Creek Reach 1	01	-2.2	-0.4	+0.6	020	A4	Varies
Gates Creek Reach 1	01	-1.9	-0.4	+0.5	020	A4	Varies

[1] FLOOD INSURANCE RATE MAP PANEL
[2] WEIGHTED AVERAGE
[3] ROUNDED TO NEAREST FOOT – SEE MAP

TABLE 3

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

VILLAGE OF FRANKLINVILLE, NY
(CATTARAUGUS CO.)

FLOOD INSURANCE ZONE DATA

GATES CREEK AND ISCHUA CREEK

7.0 LOCATION OF DATA

Survey, hydrologic, hydraulic, and other pertinent data used in this study can be obtained by contacting the Office of the Federal Insurance Administration, Regional Director, 26 Federal Plaza, New York, New York 10007.

8.0 BIBLIOGRAPHY AND REFERENCES

1. Population Data for the Village of Franklinville, Lockwood-Kessler-Bartlett, Inc., Syosset, New York, 1975.

2. U. S. Department of Agriculture, Soil Conservation Service, Generalized Soil Map of New York State, Cornell University Agricultural Experiment Station, 1967.

3. Allegheny River Basin Regional Water Resources Planning Board, Draft of Comprehensive Water Resources Plan for the Allegheny River Basin, May 1975.

4. U. S. Department of the Interior, Geological Survey, "Maximum Known Stages and Discharges of New York Streams Through 1973," Bulletin 72, Published by New York State Department of Environmental Conservation, 1976.

5. U. S. Army Corps of Engineers, Tropical Storm Agnes - June 1972; Past Flood Report, New York, October 1974.

6. U. S. Department of Agriculture, Soil Conservation Service, Ischua Creek Watershed Work Plan, (Supplement), January 1965.

7. New York State Department of Environmental Conservation, Allegheny River Basin - Peak Flow Regionalized Analysis, (unpublished).

8. U. S. Department of Agriculture, Soil Conservation Service, TR-20 Computer Program, Engineering Division, May 1965.

9. U. S. Department of Agriculture, Soil Conservation Service, WSP-2 Water Surface Profiles Generalized Computer Program, Engineering Division, May 1961.

10. U. S. Department of Agriculture, Soil Conservation Service, National Engineering Handbook, Sections 4, Hydrology and Section 5, Hydraulics, (Supplement B).

11. U. S. Department of the Interior, Geological Survey, Flood Height - Drainage Area Relation for 100-Year Flood, New York Basins, Unpublished.

12. U. S. Department of Interior, Geological Survey, 7.5 Minute Series (Topographic) Maps, Scale 1:24,000, Contour Interval 20 feet, Franklinville, New York, 1963.

13. U. S. Department of Agriculture, Soil Conservation Service, Photogrammetric Maps of the Village of Franklinville, Cattaraugus County, New York, Scale: 1:4,800; Contour Interval 5 feet.

14. U. S. Department of Agriculture, Soil Conservation Service, HUD-15 Computer Program, Central Technical Unit, March 1974.

15. U. S. Department of Housing and Urban Development, Federal Insurance Administration, Flood Insurance Study, Town of Franklinville, Cattaraugus County, New York, unpublished.

Allegheny River Basin Regional Water Resources Planning Board, Alternatives for Water Resources Development and Management, March 1971.

Beard, L. R., Statistical Methods in Hydrology, U. S. Army Corps of Engineers District, Sacramento, January 1972.

New York State Legislative Manual (1975).

Potter, W. D., "Use of Indices in Estimating Peak Rates of Runoff," Public Roads, Vol. 28, No. 1 - Pages 1-8, April 1954.

U. S. Department of the Interior, Geological Survey, Water Resources Data for New York (and Pennsylvania), (Part 1 - Surface Water Records) Annual, 1976.

U. S. Department of the Interior, Geological Survey, Surface Water Supply of the United States, Part 3 (Ohio River Basin), periodic Summary, 1976.

U. S. Department of Interior, Geological Survey, Roughness Characteristics of Natural Channels, Water Supply Paper 1849, 1967.

U. S. Department of the Interior, Geological Survey, Magnitude and Frequency of Floods in the United States, Professional Paper #924, 1975.

U. S. Department of Agriculture, Soil Conservation Service, A Method for Estimating Volume and Rate of Runoff in Small Watersheds, Technical Paper #SCS-TP-149, April 1973.

U. S. Weather Bureau, Technical Paper No. 40: Rainfall Frequency Atlas of the United States, May 1961.

U. S. Water Resources Council, "Guidelines for Determining Flood Flow Frequency," Bulletin No. 17, Hydrology Committee, March 1976.

REACH 1
ZONE A4

LIMIT OF FLOODING AFFECTING THE VILLAGE OF FRANKLINVILLE

CORPORATE LIMITS

ELM STREET

CORPORATE LIMITS

CONRAIL

LIMIT OF FLOODING AFFECTING THE VILLAGE OF FRANKLINVILLE

ELEVATION IN FEET (NGVD)

1595
1590
1585
1580
1575
1570
1565

-4 -3 -2 -1 0 1 2 3 4 5 6

STREAM DISTANCE IN THOUSANDS OF FEET FROM CORPORATE LIMITS

A B

LEGEND

- 500 YEAR FLOOD
- 100 YEAR FLOOD
- 50 YEAR FLOOD
- 10 YEAR FLOOD
- STREAM BED
- A — CROSS SECTION LOCATION

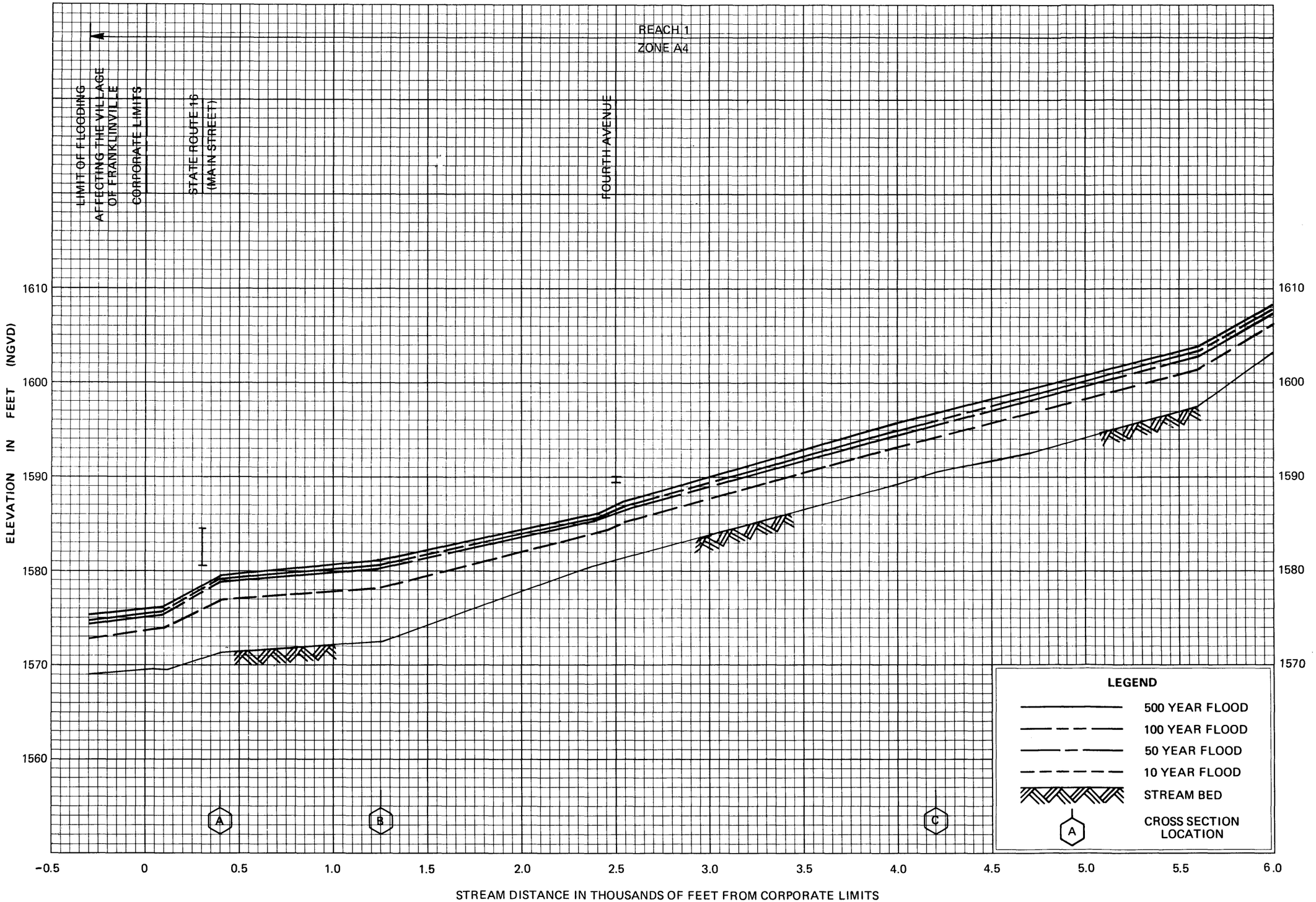
FLOOD PROFILES

ISCHUA CREEK

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

VILLAGE OF FRANKLINVILLE, NY
(CATTARAUGUS CO.)

01P



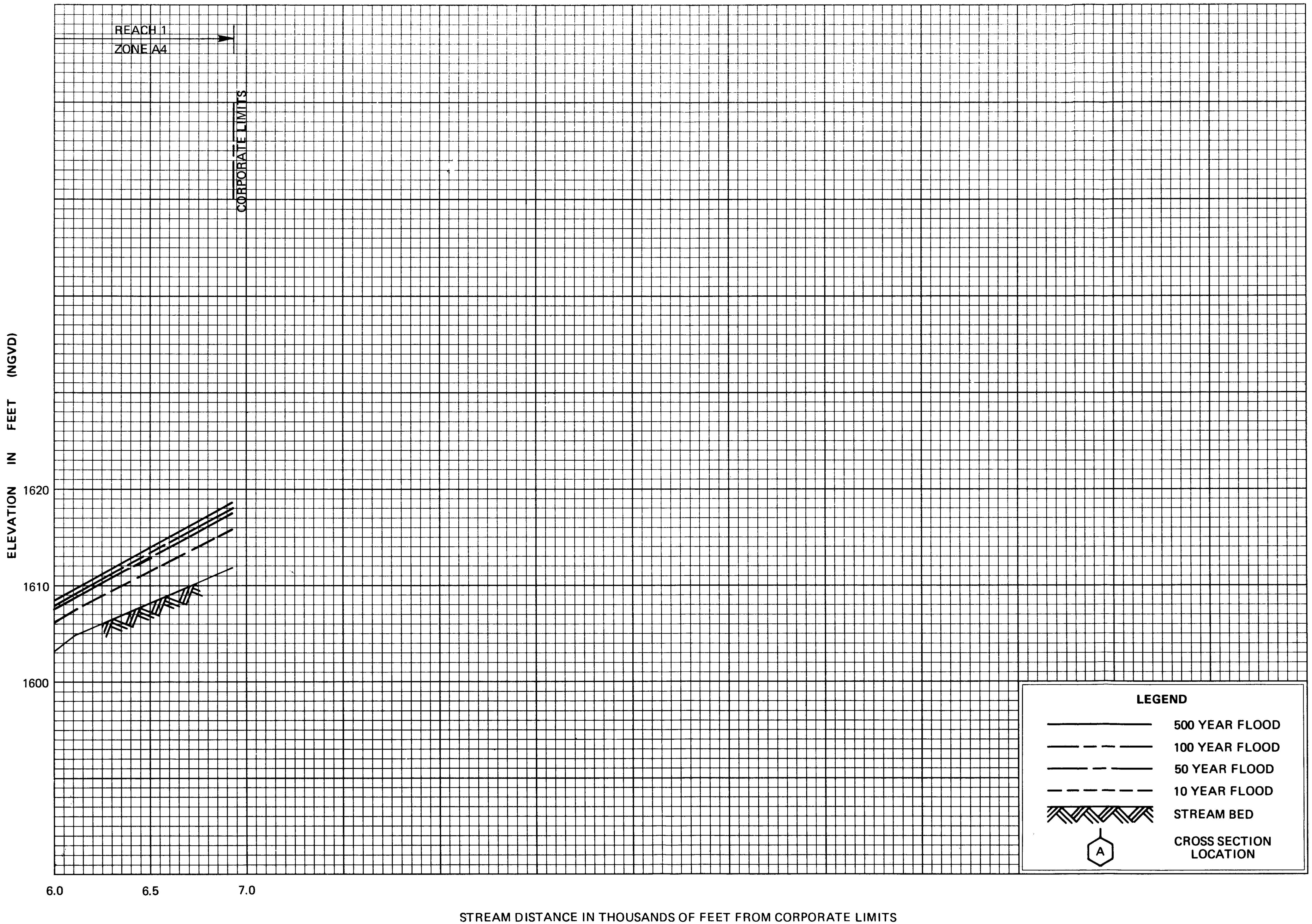
FLOOD PROFILES

GATES CREEK

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

VILLAGE OF FRANKLINVILLE, NY
(CATTARAUGUS CO.)

02P



FLOOD PROFILES

GATES CREEK

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

VILLAGE OF FRANKLINVILLE, NY
(CATTARAUGUS CO.)

03P